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Environmental Assessment

20 Mile Creek Restoration

Great Divide Ranger District
Chequamegon-Nicolet National Forest

Bayfield County, Wisconsin

Legal Description

Township 44 North, Range 5 West, Section 6

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I. Introduction

The Great Divide Ranger District of the Chequamegon-Nicolet National Forest (CNNF) is proposing to restore a segment of Twentymile Creek on National Forest System lands in the Town of Grand view, Bayfield County, Wisconsin. The project would involve the removal of a remnant, eroding railroad grade crossing (located at T44N R5W Section 6), returning a braided section of stream to one channel, and lowering a 300 foot stretch of the stream channel (to reduce the slope to a more natural grade). The result would be a narrower, deeper channel with gravel and cobble substrate.

The Forest Service has prepared this environmental assessment (EA) to determine whether effects of the proposed activities may be significant enough to prepare an environmental impact statement. By preparing this environmental assessment, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA) and other relevant Federal and state laws and regulations. Details regarding the Proposed Action are provided on page 5. Consideration of a no-action alternative was documented through the effects analysis by contrasting the impacts of the proposed action with the current condition and expected future condition if the proposed action were not implemented (36 CFR 220.7(b)(2)(ii)). This EA also incorporates by reference the Final Environmental Impact Statement (Forest Plan FEIS) for the Revised Land and Resource Management Plan (Forest Plan) for the Chequamegon-Nicolet National Forest.

II. Purpose and Need for Action

Twentymile Creek is a very high quality Class I native brook trout stream, receiving a good baseflow of groundwater and with consistently cold water temperatures throughout the watershed. The Twentymile Creek Watershed is functioning but at risk. It has benefitted from a large number of activities in the past that have reduced erosion and sedimentation and restored aquatic habitat; however, several conditions remain that require restoration actions to bring the watershed into a fully functioning condition. This is one of several project proposals designed to improve the condition of the stream and watershed. Appendix B: Photos further illustrates this description of the purpose and need for action.

During the early 1900's a railroad grade was constructed along Twentymile Creek crossing it in Section 6 of T44N and R5W. While abandoned many years ago, the grade continues to have a substantial impact on the stream and its aquatic ecosystem. The crossing included a concrete arch culvert accompanied by 6-8 feet of fill (Photo 1). The culvert failed many years ago along with a portion of the fill, which washed into the stream. The remaining fill continues to erode on the west side of the stream. The undersized culvert created an

unnaturally high water velocity downstream, resulting in the formation of a large scour pool. Large cobble and boulders were scoured out and deposited at the outlet of this pool in a semi-circle known as the tail-water control (Photo 2). This control is at a higher elevation than the natural channel bed, causing the downstream channel to over-steepen and braid (Photo 3). There are currently multiple channels within the 100 foot stretch immediately below the tail-water control. They merge into two channels which eventually become one (300 feet downstream). The over-steepened channel extends at least 100 feet downstream from the tail-water control. The existing slopes range from 2.6 to 6.4 percent. The natural (desired) channel slope is approximately 1-2 percent (Appendix C, Figure 1, Profile Graph). The higher elevation of the tail-water control has also caused a reduction in the upstream channel slope (to 0.5%) for a distance of over 220 feet. This reduction has caused sand and gravel to accumulate in the channel upstream.

Relationship of the proposed project to the USDA Forest Service Watershed Condition Framework:

National direction for watershed condition is contained in the *USDA Forest Service Strategic Plan for FY 2007–2012* (USDA Forest Service 2007). Goal 1 is to **"**Restore, sustain, and enhance the Nation's forests and grasslands**"** (USDA Forest Service 2007). Objective 1.5 is to **"**Restore and maintain healthy watersheds and diverse habitats**"** (USDA Forest Service 2007).

The FY 2011 Forest Service Program Direction emphasizes concentrating restoration activities in a few select locations to show meaningful improvement to watershed condition. "The overarching priority for restoration is on the implementation of integrated ecosystem restoration projects on priority [targeted] watersheds at the hydrologic unit code (HUC) 6 scale with the goal of improving the targeted watershed's condition class. Priority should be given to implementing integrated ecosystem restoration projects that are collaborative and part of an all-land, large-scale conservation strategy. Restoration efforts are to focus on repairing impairments to the natural diversity and ecological dynamics of National Forest System (NFS) lands; providing ecosystem services that are important to the public including clean and abundant water, renewable energy from biomass, restored wildlife and fish habitat, forest products, and resilient forests and rangelands; and stabilizing and creating jobs (1417–1418)". "The intent of the national direction is to, first and foremost, protect high-value watersheds already in good condition, maintain the condition of watersheds to keep them from becoming threatened and, then, improve those in an impaired condition."

National policy is to use watershed conditions to help prioritize watersheds and consider resource factors, risks, values and benefits, economics, social factors, and partnership

opportunities when setting priorities (FSM 2521.11b).The U.S. Department of Agriculture (USDA) *Strategic Plan for FY 2010–2015* targets the restoration of watershed and forest health as a core management objective of the national *forests* and grasslands. To achieve this goal, the Forest Service, an agency of USDA, is directed to restore degraded watersheds by strategically focusing investments in watershed improvement projects and conservation practices at the landscape and watershed scales.

Twentymile was identified as a priority watershed during the Watershed Condition Classification process described above. This prioritization led to the development of the Twentymile Watershed Restoration Action Plan (PR, Folder 6, References). The evaluation of the Twentymile watershed resulted in a condition class rating of 2 (functioning at risk). The target (desired) rating is 1 (functioning properly). Watershed condition reflects a range of variability from natural pristine (functioning properly) to degraded (severely altered state or impaired). Watersheds that are functioning properly have terrestrial, riparian, and aquatic ecosystems that capture, store, and release water, sediment, wood, and nutrients within their range of natural variability for these processes. When watersheds are functioning properly, they create and sustain functional terrestrial, riparian, aquatic, and wetland habitats that are capable of supporting diverse populations of native aquatic- and riparian-dependent species. In general, the greater the departure from the natural pristine state, the more impaired the watershed condition is likely to be. Watersheds that are functioning properly are commonly referred to as healthy watersheds (WCF, p. 12). This proposal is one of 13 "Essential projects" that were identified within the Twentymile Watershed Restoration Plan as needed to improve the watershed condition class (from 2 to 1).

Therefore, one purpose of this project is to reduce the current impacts to Twentymile Creek at this site as one step toward improving the health and condition of the Twentymile Creek Priority Watershed, as part of USDA's Watershed Condition Framework.

Relationship of the proposed project to the Forest Plan: The Forest Plan sets goals and direction for managing the Forests through two types of management direction, Forest-wide direction, and Management Area (MA) direction. Forest-wide direction is described in terms of goals, objectives, standards and guidelines. The following goals and objectives support the proposal:

Goal 1.3: Aquatic Ecosystems- provide for ecologically healthy streams, riparian areas, lakes, and wetlands including a decline in the occurrence of exotics.

Objective 1.3e: Improve or restore aquatic/riparian habitat in streams and lakes.

Objective 1.3g: Protect and restore cold-water stream communities by maintaining Class I, II, and segments of Class III trout streams and their tributaries in a free-flowing condition.

Goal 1.5: Wildlife and Fish Habitat- conserve habitat capable of supporting viable populations of existing native and desired non-native species, and retain the integrity and function of key habitat areas.

Therefore, a second purpose of this project is to restore the natural hydrology to this section of Twentymile Creek in order to improve its aquatic and riparian habitat.

Summary of Project Objectives:

Reduce erosion and sedimentation

Indicator: tons sediment annually

Restore hydrology

Indicators: percent channel slope, channel width/depth ratio, channel flow (CFS)

Improve aquatic and riparian habitat

Indicators: width/depth ratio, floodplain width

III. Proposed Action

The Forest Service is proposing to restore this segment of stream by:

1) Removing the remnant railroad grade crossing,
2) Lowering the tail-water control, and
3) Allowing the normal flow to be contained in one channel.

The fill at the crossing would be removed down to floodplain level for a distance of approximately 15 feet on each side of the stream (Appendix C: Figure 2). It would be tapered back on each side at a slope of 2:1. The fill on the northeast side of the channel (approximately 230 cu yards) would be returned to an upland depression further northeast along the south edge of the grade. Soil was removed from this depression in the past, for creation of the grade. A similar amount of fill on the southwest side of the channel would be disposed of at a nearby upland site (such as in a gravel pit). The remains of the concrete culvert would be hauled away and disposed of in a suitable location. The channel would be

restored to a bankfull width of about 15 feet. Stream banks would be reconstructed using an excavator and rock and soil from on site to match the natural form and height of the stream. About one dozen three to eight inch diameter ash, maple, white birch and black cherry trees would be removed from the grade. Most of these trees would be removed from the east side of the stream because they are growing on the area of the grade that would be removed. All disturbed soil would be seeded (native or non-invasive mix) and mulched. Silt fence would be installed to prevent sediment movement into the stream until all disturbed areas are revegetated.

The profile (slope) of the stream would be restored by lowering the tail-water control and streambed in the channel that flows to the right (facing downstream). The channel would be lowered for a distance of about 300 feet to restore a slope of about 1.7 percent (Appendix C: Profile Graph). The Forest would utilize a tracked excavator to remove the accumulated gravel and cobble from the stream channel below the grade crossing. The cobble and gravel would be removed down to the historic stream bed elevation. The material removed would be disposed of in a nearby Forest Service gravel pit. The channel to the right appears to be the historic channel because it has bankfull widths of 13-15 feet while the left channel widths are only 7-9 feet. It has a bed of predominantly gravel and cobble with some scattered boulders, as well as two short steps that appear to be bedrock outcrops.

The channel upstream from the crossing would be allowed to adjust and restore itself naturally over time. It is anticipated that much of the accumulated sand will move downstream over time once the profile of the stream is restored below the crossing. The result would be a narrower, deeper channel with more gravel and cobble substrate.

The following project design features and mitigation measures (in addition to those required by the Forest Plan) would be utilized:

- No in stream activity would occur between September 15th and April 15th to protect aquatic organism spawning and rearing and avoid danger to hibernating wood turtles.
- A Heritage Resources representative would be on site during construction activities to prevent disturbance of any adjacent cultural resource sites (see EA page 17).
- All equipment used in stream will utilize biodegradable hydraulic fluid.
- All construction equipment would be cleaned of mud and weed seeds prior to arriving on site.
- Stream flows would be maintained through the site during construction.

- Place a fencing barrier both up and down stream of the work site to prevent wood turtles from entering the site while in the stream.
- Place a fencing barrier along the banks of the job site with inside turns to prevent wood turtles from entering the stream or any area where equipment will be working.
- Search the area of machinery use prior to machinery moving about, to locate and remove any turtles that may have wandered into the work area
- Utilize the following mitigation measures to protect potential wood turtle nesting sites: (1) reshape the bank and smooth contours when re-vegetating exposed stream banks; (2) partially cover stabilization structures with sod and revegetate with species similar to those growing on the adjacent bank; (3) vary the rock size and utilize native rock for rip rap and within-water rock structures; and (4) maintain natural stream meanders when making within-stream improvements (Guideline).
- The Biological Evaluation would be reviewed upon obtaining any new information or species location prior to or during completion of the project. If any Federal or RFSS species are observed in the project area prior to or during project implementation, the project and effects would be reviewed and potential mitigation measures identified.

IV. Permits, Licenses and Other Requirements

Army Corps of Engineers Section 404 Permit

The Federal Water Pollution Control Act Amendments of 1972, renamed the **Clean Water Act (CWA)** in 1987, establishes federal water quality policies, goals, and programs. Both the Environmental Protection Agency (EPA) and the states have responsibilities for carrying out the intent of the CWA. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."

Under Section 404 of the Clean Water Act, an Army Corps of Engineers permit is required for the discharge of dredged or fill material into waters of the United States (U.S.). Twentymile Creek is considered a water of the U.S. and is subject to the Corps' Section 404 regulatory authority.

State of Wisconsin Chapter 30 Permit

Portions of the Clean Water Act have been delegated to the State of Wisconsin. Chapter 30 water regulatory permits are required by the Wisconsin Department of Natural Resources for a variety of activities within or near state navigable waters. A dredging permit is

required to dredge or remove materials (muck, sand, gravel, silt, organic material, etc.) from the bed of a stream. A grading permit is required for grading or removing more than 10,000 square feet on the bank of a navigable or public waterway.

V. Scoping and Public Involvement

Public Notification: This proposal was first listed on the Forest's Quarterly Schedule of Proposed Actions (SOPA) in April 2012. This Schedule was mailed to parties that have indicated interest in projects that occur on the Forest and is available on the World Wide Web at http://www.fs.usda.gov/projects/cnnf/landmanagement/projects. The official comment period for the 20 Mile Creek Restoration Project was initiated on April 20, 2012 when the opportunity to comment was published in The Daily Press, Ashland, Wisconsin. A letter announcing the official comment period for this project was sent to 65 parties who were thought to be interested in or affected by the proposal. The mailing included other agencies, local governments, local tribal representatives and the public. During the comment period, the Forest Service received two responses; one offering support of the project and the other indicating no concerns. The information packet, mailing lists, and comment letters are filed in the project record (Public Involvement folder).

VI. Environmental Impacts of the Proposed Action

This section summarizes the potential impacts of the proposed action. Since no unresolved conflicts were identified, there was no need to consider additional alternatives (36 CFR 220.7(b) (2) (ii, iii)). Environmental impacts of the Proposed Action on water quality and aquatic organisms, plant and wildlife resources, and heritage resources would remain well-within Forest Plan desired conditions. Though considered and analyzed for this EA, they are not discussed at length, pursuant to 40 CFR 1500.4(c). Additional information on each resource is contained in the resource reports located in the Project Record (PR. Vol.5). Project design features developed to prevent or mitigate resource impacts are listed at the end of Section III, Proposed Action.

Water Quality, Hydrology and Aquatic Organisms

The spatial boundary used to evaluate the direct and indirect effects of the Proposed Action on water quality, hydrology and aquatic organisms was the Twentymile Creek Watershed. The watershed boundary was chosen because it represents the area that could influence or be influenced by the project activities. Direct and indirect effects are those caused by the project activities. Cumulative effects are those caused by or resulting from this project in

combination with those that have, are, or are expected to occur within the watershed. They have the potential to add to or subtract from one another.

Objective 1- Water Quality: Reduce Erosion and Sedimentation

Indicator: tons sediment/acre

Existing condition

Visual estimates indicate the east face of the washed out grade crossing is eroding 1-2 inches per year. This amount of erosion is adding 1.9 to 3.8 tons of sediment to Twentymile Creek annually. Sedimentation is expected to continue at this rate or gradually increase as more of the face of the grade is exposed.

Proposed Action

Direct and Indirect Effects

While the goal of this project is to reduce sedimentation and improve water quality, excavation of the stream bed material to restore the channel slope will mobilize some fine sediment downstream and cause a short term increase in water turbidity. This would occur during the one or two days that in-stream work is takes place. The increased turbidity would decrease rapidly after work is completed lasting only an hour or two. Conducting in-stream work during periods of low water flow would reduce the amount of sediment that is mobilized minimizing water turbidity. In the long term, sediment delivery and stream turbidity would be reduced by 1.9 to 3.8 tons annually, as a result of restoring the floodplain and eliminating the eroding face of the grade fill.

Cumulative Effects

There is no need to measure cumulative effects because the direct and indirect effects resulting from taking action would be a reduction in the amount of sedimentation at the site as compared to what is occurring now (beneficial effects).

Objective 2- Stream Channel Morphology: Restore hydrology

Indicators: percent channel slope, channel width/depth ratio, channel flow (cubic feet per second (CFS))

Existing Condition

The concrete culvert is too small to pass flood flows and was installed too high. This has led to water ponding upstream during high flow events, the eventual failure of the structure, and the accumulation of bed load upstream. This has resulted in an unnatural stream

channel gradient or slope ranging from 2.6 to 6.4 percent (Appendix C, Stream Profile graph). The undersized culvert size has also created an unnaturally high water velocity downstream. This has led to the scour of a plunge pool, deposition of coarse channel material, and channel braiding. The channel width depth ratio is greater than 20. Construction of the railroad grade involved the placement of fill material within the floodplain of Twentymile Creek effectively blocking it. Water is unable to access the flood plain during high flow events in this section of stream. Since the floodplain is not able to store water during high flow conditions, all water becomes concentrated in the stream channel. The predicted 100 year return interval flood is 272 CFS. This volume of water is concentrated within the stream channel.

Proposed Action

Direct and Indirect Effects

The stream channel gradient would be restored to a natural condition (1-2 percent slope). The stream flow would be consolidated into the eastern channel during all but high water condition. The grade fill would be removed from the stream's floodplain, allowing flood waters to spread out reducing stream channel scour. The cross sectional area of the stream would be restored through removal of the collapsed culvert. Removal would also eliminate the ponded water upstream and the scour downstream. The stream channels would be designed to mimic natural stable reaches near the project site as well as elsewhere on the Forest. The resulting width depth ratio and channel flow are displayed in Table 1. All the proposed activities would move this reach of Twentymile Creek towards a natural state of equilibrium.

Table 1. Objective 2: Stream Morphology

Restore Hydrology Indicators:	**Existing Condition**	**Proposed Action**
Percent Channel Slope	2.6 - 6.4	1 - 2
Channel W/D* Ratio	>20	12-13
Channel Flow (CFS)**	272	198

*Width/Depth Ratio

** Cubic Feet/Second

Cumulative Effects

There was no need to measure cumulative effects because the width/depth ratios and channel velocities at the site would be restored to a natural condition as a result of taking action as compared to the existing condition (beneficial effects).

Objective 3- Aquatic Organisms: Improve aquatic and riparian habitat

Indicators: Indicators: width/depth ratio, floodplain width

Existing Condition

The floodplain at the grade crossing is blocked, having a width of 0. This has led to greater in channel water velocity during high water conditions, and could lead to an increase in channel bed and bank scouring in the future. The stream channel gradient impacts have resulted in a general loss of aquatic habitat as seen in the Rosgen reach type changes that have occurred (from a stable B4 stream type to an unstable DA4 stream type). The existing measured width/depth ratios are over 20 in the project area. The reference reaches immediately upstream and downstream have a width/depth ratio of 10.6 and 13.2 respectively. As the width/depth ratio increases the stream channel becomes wider and shallower, an undesirable condition for cold-water aquatic species. Critical deep water habitat and cover becomes less as the width/depth ratio increases. Aquatic habitat would remain impacted under this alternative.

Proposed Action

Direct and Indirect Effects

The floodplain at the grade crossing would be restored to 50 feet wide under this alternative. This would lower channel water velocity during high water conditions as all the water wouldn't be confined to the stream channel. Restoring the floodplain would also eliminate the ponded water upstream and the scour downstream. Reducing the width/depth ratio to 12-13 would increase deep water habitat and cover for aquatic organisms.

Table 2. Objective 3: Aquatic Organisms

Restore Hydrology Indicators:	Existing Condition	Proposed Action
Channel W/D* Ratio	>20	12-13
Floodplain Width	0	50

*Width/Depth Ratio

Cumulative Effects

There was no need to measure cumulative effects because the width/depth ratios and floodplain width at the site would be restored to a natural condition as a result of taking action as compared to the existing condition (beneficial effects).

Biological Evaluation

The list of TES species evaluated was identified in cooperation with the USDI Fish and Wildlife Service and other species experts within as well as outside the Forest Service. All Federally listed species and Regional Forester Sensitive Species (RFSS) were considered for analysis in the Biological Evaluation. However, only those species with suitable habitat and at least a marginal potential of occurrence within the project area were analyzed in detail.

Wildlife

The wildlife considered for the 20 Mile Creek Restoration Project included two federally listed species and 26 RFSS. The species with suitable habitat and at least a marginal potential of occurrence within the project area included: Kirtland's Warbler, Canada Lynx, Gray Wolf, Little Brown Myotis, Northern Myotis, Tri-colored Bat, and Wood Turtle. The "affected area" for consideration of direct and indirect effects was the 1 acre project area. Direct effects occur at the same time and place as the subject action. Direct effects analyzed occur in occupied habitat such that the animals themselves are harmed or their behaviors are altered, affecting foraging or reproduction (e.g. courtship, nesting/denning, or raising young). Indirect effects, though caused by the action, may occur at a different time or place (ibid). Indirect effects analyzed are to unoccupied habitat, such that the habitat becomes unsuitable and no longer available to the species.

Cumulative effects result from the incremental addition of current effects to those of past, present and reasonably foreseeable actions. It is important to note that if there are no direct or indirect effects, there would be no incremental addition to the effects of past, present and reasonably foreseeable actions and therefore no cumulative effects. A summary of the Biological Evaluation for wildlife follows. The complete BE is available in the Project File.

***Summary of wildlife effects*:** The Proposed Action would result in a "No effect" determination for the federally listed Kirtland's warbler and Canada lynx and their habitat. There would be no impact from the proposed action on any Regional Forester Sensitive species (RFSS) or Likely to Occur RFSS. Since no direct or indirect effects were noted, there can be no cumulative impacts.

Kirtlands's Warbler

There are no known occurrences of Kirtland's warbler or its habitat within or near this project so there would be no direct or indirect effects. The closest known suitable unoccupied habitat is more than 10 miles away. Because the project would have no direct and indirect effect on Kirtland's warblers, there is no cumulative effect to evaluate for this species.

Canada Lynx

The 20 mile project is anticipated to have "No effect" to the species or its habitat, because the lynx is not known to occur on the CNNF, the proposed action is in compliance with the

Forest's Land and Resource Management Plan, and does not impact any lowland conifer gauged to be the most suitable type for lynx.

Gray Wolf

Based on information gathered in the State of Wisconsin and on the CNNF, the following potential threats exist to wolves across its range in Wisconsin 1) loss of habitat/adequate prey; 2) human disturbance; and 3) disease. The potential direct and indirect effects to wolves were analyzed at the scale of the project area and with these criteria in mind:

1. Amount of direct disturbance to denning or rendezvous sites
2. Changes in road densities within suitable and/or occupied habitat
3. Changes in present prey availability - distribution and density

Currently, no identified den or rendezvous sites exist in the project area portion of the Porcupine Lake Pack territory and the habitat is not suitable for such use. Therefore, no impacts to these important wolf habitat areas would result from the project activities. Additionally, as a safeguard to wolves on the Forest, if any new den or rendezvous sites are located by the CNNF-WDNR wolf monitoring program prior to work within the project area, the following Forest Plan standards (USDA FS 2004a, page 2-19) may apply:

- Place a year-round restriction on land use activities (harvesting, road construction, etc.) within 330 ft. radius of such sites;
- Discourage human use of these areas;
- Within ½ mile of these sites, prohibit land use activities during the period of March 1 thru July 15 and no new road or trail construction will be permitted in this zone.

Changes to prey availability and distribution would not occur as a result of the proposed action. Road density would not change as a result of the project activities because no new road construction is proposed.

The BE determination was no impact. There would be no direct, indirect, or cumulative effects on wolves resulting from the proposed action.

Tri-colored Bat

Suitable foraging habitat was defined as upland hardwood, bottom-land hardwood, and pine-hardwood forest types. Potentially suitable roosting habitat could generally be defined as stands ≥60 years old in upland hardwood and pine-hardwood forest types. The Proposed Action does not affect any known hibernacula, so a major threat to this habitat does not exist within the project. The suitable habitat in the project area is not currently known to be occupied. The one acre of suitable habitat for the tri-colored bat in the project area will not be made unsuitable by project activities. Since there are no direct or indirect effects, no cumulative effects exist to be analyzed.

Northern (Long Eared) Myotis

This species is considered common in northern Wisconsin (USDA 2004c), but in very low numbers. Northern Myotis has been recorded on all districts of the Chequamegon-Nicolet National Forest. They could potentially occur anywhere on the Forest in mature forest types with sufficient snags and hollow trees to provide roosting habitat.

Major threats for this species are white-nose syndrome, the loss of hibernacula, and removal of snags and hollow trees that are suitable for roosting (USDA 2004c). Suitable foraging habitat for this species is defined as upland hardwood, bottom-land hardwood, and pine-hardwood forest types. Potentially suitable roosting habitat could generally be defined as stands ≥60 years old in upland hardwood and pine-hardwood forest types.

The Proposed Action does not affect any known hibernacula, so a major threat to this habitat does not exist within the project. The suitable habitat in the project area is not currently known to be occupied by the species. The one acre of suitable habitat for the Northern Myotis in the project area will not be made unsuitable by project activities. Since there are no direct or indirect effects, no cumulative effects exist to be analyzed.

Little Brown Myotis

The Little Brown Myotis is the most common of Wisconsin's seven bat species as well as the most common bat on the Chequamegon-Nicolet National Forest. Distributed widely across North and Central America, this bat is also found throughout Wisconsin during summer and winter, and comprises the majority of bats found at most roost sites in the state. Major threats for this species are white-nose syndrome, the loss of hibernacula, and removal of snags and hollow trees that are suitable for roosting (USDA 2004c). Suitable habitat for this species is defined as open canopy forest of any type that is older than 60 years. Stands older than 60 years are assumed to have snags of the size and characteristics (sloughing bark) favorable to little brown Myotis.

The Proposed Action does not affect any known hibernacula, so a major threat to this habitat does not exist within the project. The suitable habitat in the project area is not currently known to be occupied by the species. The one acre of forest suitable foraging and roosting habitat for the little brown Myotis in the project area will not be made unsuitable by project activities. Since there are no direct or indirect effects, no cumulative effects exist to be analyzed.

Wood Turtle

The wood turtle is a medium sized semi-terrestrial turtle that has been known to live as long as 58 years in captivity, and 32 years in the wild. They mate in spring and fall, both in and out of the water. Females dig nests in June in communal nest sites, generally on sand or gravel banks near the water. After eggs are laid, adults in eastern populations often

disperse to more upland areas for summer range; eggs hatch in September. Wood turtles are known to concentrate around basking sites or favorite food patches.

The wood turtle is described as preferring forest, but may use all upland and lowland types adjacent to riverine habitat (typically 3rd to 5th order streams). Shrub communities may be important in spring for basking and security cover. Wood turtles use sand or gravel river banks for nesting sites, although they have been known to use gravel roadsides, borrow pits, and railway embankments. Flat sandy areas adjacent to streams may also be used.

Wood turtles do not typically travel far from their home streams. Studies across their range indicate 300 feet is the maximum distance traveled (Bowen and Gillingham, 2004, p. 33). Based on this information, and the wide latitude in habitat types used by wood turtles, the analysis for this project considered all upland and lowland types within 300 meters of Twentymile Creek as suitable habitat.

There are no known records of wood turtles in the project area or in the 20 Mile Creek watershed on National Forest System lands. Records of wood turtles in the 20 Mile Creek watershed outside the National Forest boundary are either more than 20 years old or anecdotal. A recent search of the area did not locate any wood turtles. These factors combined indicate that while wood turtles may move freely up and down 20 Mile Creek, the likelihood of the project area being occupied during project activities is low.

Equipment use within the aquatic and terrestrial habitat could result in injury or death to wood turtles if any are in the area during project implementation. There would also be a short-term disruption of the available habitat, followed by long-term habitat improvement.

Several project design features were incorporated into the proposed action (Section III, p. 6-7) to prevent direct and indirect impacts to wood turtles.

The BE determination was no impact. While heavy equipment use in and adjacent to 20 Mile Creek poses a risk to wood turtles, the lack of observations on the National Forest or recent observations off Forest indicates a low likelihood of presence during the implementation period. This low risk is further offset by the design features to fence, survey, and relocate any turtles at the site.

Plants

The plants considered for the 20 Mile Creek Restoration Project included one federally listed species, 53 vascular and two non-vascular plant species listed as RFSS, and 11 likely to occur RFSS plant species. Following this initial review, it was found that there is suited but unoccupied habitat for one plant species, marsh horsetail (Equisetum palustre) that may be affected by proposed management. This one plant was analyzed in further detail. A

summary of the Biological Evaluation for plants follows. The complete BE is available in the Project File.

Summary of plant effects: The BE concluded there would be no effect on any federally-listed species. Populations or habitat of threatened or endangered species would not be altered in a detrimental way from implementation of this project. The project would also not lead or trend other species towards federal listing or impact in a detrimental way suited but unoccupied habitat. The determination for all plant species evaluated was no impact.

Marsh Horsetail

One RFSS plant species, Marsh Horsetail (Equisetum palustre) has suited habitat within the project area and was evaluated in further detail. Surveys for marsh horsetail along Twentymile Creek were originally conducted in 2004 and again in April of 2012. No sites for this species occur within the project area although suited habitat is present.

Marsh Horsetail inhabits flooded meadows, marshes, wooded swamps, and the edges of cold-water streams. This last habitat is the one most associated with sites in the upper Midwest including the CNNF where it is found either in or directly adjacent to streams of this type. Overstory canopy type and closure does not appear determine habitat suitability for this species as it is found in both shaded and open areas. The entire length of Twentymile Creek within the project area represents suitable habitat for marsh horsetail.

The most applicable limiting factor would be changes in hydrology. Because marsh horsetail does not occur along Twentymile Creek, the proposed action would not directly affect this RFSS plant. The proposed action, which includes making physical changes to the stream channel and banks in an attempt to restore the stream to its original channel would impact existing suitable habitat making this habitat unsuited for a very short period of time. Like most members of this genus, marsh horsetail is known to readily inhabit recently disturbed ground (Borg, 1971, p. 99) and if the plant was present in the vicinity it is expected that disturbed ground would quickly become suited habitat.

Cultural Resources

Cultural resources are defined as irreplaceable properties within their physical surroundings that relate primarily, but not exclusively, to past human life. They include archaeological sites, historic buildings and structures, areas or districts, memorials, cultural landscapes, and objects that are generally greater than fifty years in age. They reflect intangible cultural phenomena such as ideas, social values, folklore, and life ways. Cultural Resources can possess great value in that they are keys to understanding the development of human cultural systems. They possess cultural importance through the values they convey to the public relative to the heritage left by both native and immigrant American groups.

The process of taking into account the cultural resources in the area of the proposed federal undertaking on the Chequamegon-Nicolet is done in accordance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and implementing direction provided in 36 CFR 800, Protection of Historic Properties. This direction is further documented in the CNNF's 2004 Land and Resource Management Plan (LRMP). The emphasis of the LRMP is to protect these cultural resources with a goal to enhance their values through selectively providing interpretive and educational opportunities.

Cultural resource surveys were conducted in accordance with the Programmatic Guide to the Heritage Program, Chequamegon-Nicolet National Forest (2005). The initial reconnaissance cultural resource surveys within and adjacent to the proposed 20 Mile Creek Culvert Removal Project APE were first completed in 2002. The evaluation of the remnant railroad culvert was conducted in 2004. This concrete culvert may have been erected as early as ca. 1903 or it represents the replacement of an earlier structure at this site along the LS&SE Railroad. The year 1903 would be an early date for concrete construction. In 2008, the WI State Historic Preservation Office (SHPO) found that the culvert was not eligible for the National Register of Historic Places. Thus, it can be removed without further documentation or consultation.

An adjacent site interpreted as an early twentieth century farmstead, was identified in 2005 and remains unevaluated. The avoidance treatment coordinated with the SHPO for this site was reviewed and found adequate for the purposes of the project in 2008. The forms recording these properties are maintained at the Great Divide District Office, the Forest Supervisor's Office in Rhinelander, and the Office of the State Archaeologist in Madison. Specific elements of the proposed stream crossing work that would need to be closely monitored by an archeologist to ensure site avoidance include: the culvert removal, peeling back of the railroad grade for 15' on either side of the stream, placement of fill in low areas, lifting of concrete slabs currently identified as part of the delaminating culvert, and improvement of the stream bed. If elements of the second (unevaluated) site are inadvertently discovered and cannot be avoided during construction, then work would have to stop until an evaluation of the area could be undertaken.

VII. Agencies and Persons Consulted

The Forest Service utilized an interdisciplinary team of resource specialists in the development of this environmental analysis. Information packages were provided to approximately 65 individuals and Federal, State, Tribal, and local agencies during the development of this environmental assessment:

Interdisciplinary Team:

Debra Proctor, NEPA Coordinator	Jim Mineau, Hydrologist
Sue Reinecke, Fisheries Biologist	Joyce McKay, Archaeologist

Steven Spickerman, Plant Ecologist	Scott Posner, Biologist

Federal, State, and Local Agencies:

Wisconsin County Forest Association	U.S. Fish & Wildlife Service
Town of Grandview	Wisconsin Department of Natural Resources
Ashland County Land & Water Conservation Department	WDNR- Bureau of Forest Management

Tribes:

St. Croix Chippewa Indians of Wisconsin	Bad River Band of Lake Superior Chippewa Indians
Lac du Flambeau Band of Lake Superior Chippewa Indians	Sokoagon Chippewa Community, Mole Lake Chippewa Tribe
Great Lakes Indian Fish and Wildlife Commission	Lac Courte Oreilles Band of Lake Superior Chippewa Indians

Other Groups and Partners:

Habitat Education Center	The Ruffed Grouse Society

VIII. Appendices (Attached as Separate Documents)

Appendix A: Vicinity Map and Aerial Photo of Project Area

Appendix B: Photos

Appendix C: Figures and Graphs